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ABSTRACT

Stress-relieved molded acrylic ophthalmic lenses, and injection-coining mold processes for molding stress-relieved plus and minus to high-minus diopter ophthalmic lenses of optically superior acrylic resin, able to pass standardized impact drop tests for use as eyeglass lenses, are described. The injection-coining processes use two-plate and three-plate mold assemblies. The cavity of a two plate runnerless mold is partially filled under partial tonnage, and the movable half of the mold controlled to coin and densify the acrylic resin under secondary or full tonnage, when a velocity-pressure changeover point is reached. In a process which employs a three-plate mold assembly, the lens mold cavities are partially filled under less than total clamp tonnage, with a cavity plate held by hydraulic pressure against a movable half of the mold. The mold assembly is then closed under full tonnage when a velocity-pressure changeover point is reached, collapsing the cavity plate a stationary platen, bringing the mold assembly to a total stack height. The processes produce impact resistant acrylic ophthalmic lenses which are stress-relieved and without weld lines, even in the high minus diopter range, with center thickness' as low as one millimeter, and edge thickness' up to ten millimeters.

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